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YOSEMITE NATURE NOTES

VOLUME XXXVI - NUMBER 6

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JUNE 1957



Dogwood blossoms mean spring in Yosemite



The high country is open and a naturalist program is in operation at Tuolumne Meadows.

Yosemite Nature Notes

THE MONTHLY PUBLICATION OF
THE YOSEMITE NATURALIST DIVISION AND
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VOL. XXXVI

JUNE 1957

NO. 6

FOUR EXOTIC PLANTS AND THEIR CONTROL IN YOSEMITE

By Merrie Jo Warne, Ranger-Naturalist

In Yosemite Valley and in other regions within Yosemite National Park there are several exotic or introduced species of plants which might be classed as ornamental, useful, or obnoxious (weeds). In 1948 Mr. Richard G. Lillard compiled a list of 23 species (including apple, pear, cherry, American elm, black locust, wisnara, and lilac), that were first introduced by James C. Lamon, James M. Hutchings, and other early settlers. These exotic plants occur most abundantly in areas that have been developed or used since 1859.

Mr. Lillard's article entitled "Exotic Plants in Yosemite Valley" appeared in the August 1948 issue of Yosemite Nature Notes, and in it he makes the statement "Either these belong in any new Yosemite flora to be published or else they should be eradicated." Mr. Lillard's statement, coupled with a personal interest in the native flora and the effects introduced plants have on it, recently led me to consult Mr. Emil F. Ernst, Park Forester since 1932, concerning the eradication and control methods now being employed against common mullein, Klamath weed, and bull thistle, three obnoxious plants of European origin which have become

fairly widespread in and around Yosemite Valley. This article will be primarily concerned with the information obtained from Mr. Ernst.

Bull thistle (*Cirsium lanceolatum*) is a perennial growing 2 to 3½ feet tall with deeply lobed, dusky green leaves and numerous spines. The bases of the leaves wrap around the



Bull Thistle

stem and extend out to form prickly wings. The rose-purple flower heads are $\frac{1}{2}$ to 2 inches high. Several years ago bull thistle was a common component of the large meadows and roadside plant communities in Yosemite Valley. Although it was originally a native of Europe, it is well adapted to local conditions and until control measures were brought against it, bull thistle threatened to crowd out many less hardy native plants.

The common mullein (*Verbascum thapsus*), another hardy individual



Common Mullein

introduced into the United States from Europe and now found in the flats and valleys and in the Sierra Nevada and North Coast Ranges of California, is a stout densely woolly plant 3 to 6 feet high with relatively small yellow blossoms that occur in dense spikes. The bases of the crowded leaves form wings around the stems. Mullein, too, competes with native species and so represents a threat to them.

The time and method by which bull thistle and mullein were first introduced into Yosemite Valley are not known. They have been well established for at least 30 years, but since World War II Mr. Ernst and his workers have succeeded in reducing them by about 80% so that they are no longer obnoxious intruders in the Valley meadows. In controlling mullein and bull thistle, 2 45T, a form of 2 4D, a plant growth hormone chemical, has been applied to the leaves and stems as a liquid spray administered from back pack pumps. This hormone must be applied before the plants attain maturity while they are still actively growing. It begins to operate immediately by speeding up the life processes so that the plant soon "burns itself out" and death results. Although bull thistle and common mullein are now being held in check, it is doubtful that they will ever be completely eliminated from the Yosemite area.

The European St. John's Wort or Klamath weed (*Hypericum perforatum*) has become a pest in abandoned or poorly tilled fields in northern California, and it was first detected in Yosemite from some Kodachrome slides taken during the summer of 1945. Klamath weed was probably introduced during the war years.



European St. John's Wort or Klamath weed

Possibly seeds were carried into Yosemite Valley in the coats of horses brought from the foothills. The flowering stalk of this perennial, 1 to 2 feet high, is well clothed by small dark green, linear leaves. On the delicate yellow petals are tiny black dots. The stamens are numerous. Individual Klamath weed plants are rather attractive; however, this hardy plant has spread rapidly and is now in direct competition with many native meadow plants. In plant communities where Klamath weed is the dominant species, it is definitely a fire hazard during the fall months, because the stems and leaves become completely dried out and they contain a resin-like substance which is easily ignited. Wherever it becomes established and is not controlled, this weed threatens to take over and crowd out all other species.

In Europe St. John's Wort is kept under control and in ecological balance with associated plants by the beetles which feed on it.

After experimentation to determine an effective means of controlling the spread of Klamath weed in Yosemite National Park, two species of Klamath weed beetles were introduced in 1951 (*Chrysolina gemellata* and *C. hyperici*). These beetles came to the west from Europe by way of Australia and are definitely specific in their food requirements, since they will eat only Klamath weed. When Klamath weed dies out, the beetles starve to death so they are in no way obnoxious and do not damage other vegetation.

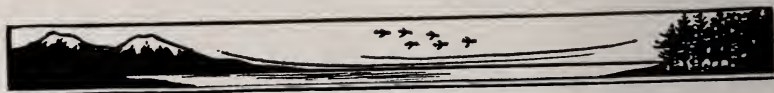
The first beetles brought into Yosemite Valley were collected from near Eureka, California, and the last batch of 25,000 came from an area near Coloma and Grass Valley, California. At the present time, according to Park Forester Ernst, the beetles are propagating and they have the Klamath weed in check; however, the situation could be better but again it could be worse.

Foxglove (*Digitalis purpurea*) is one of the worst introduced plants to contend with in Yosemite Valley. It is an extremely hardy but attractive garden flower which may be classified as an escape, since it readily becomes established beyond the tended garden, if extreme care is not exercised to control it. Some of the permanent Yosemite Valley residents have in past years planted foxglove in the areas around their homes. However, on April 26, 1956, a letter from the Acting Superintendent, Mr. Keith Neilson, was issued to all permanent residents. The letter states, "Planting of exotic flowers must be confined to window boxes and areas immediately around structures. They must not be allowed to escape . . . several escape species have been recently planted and must be eliminated: California poppy, bachelor buttons and foxgloves."

The permanent residents have cooperated fully and have removed these plants from their gardens. During the past few years several groups of foxglove plants have been found at isolated spots along the valley roads. Whenever these plants are discovered they are removed so that they have not yet become well established in the native vegetation.

For those who would question the right of National Park Service officials to exercise control measures against foxglove, bull thistle, mullein, and Klamath weed, when they are found growing within a National Park, the original authority for any

such control measures dates back to the Enabling Act which was passed on August 25, 1916 and which established the National Park Service and its basic policy which is "To conserve the scenery and the natural and historical objects and wildlife therein . . .". Since none of the four plants here discussed are native to the area, since they were all introduced by carelessness and more than likely thoughtfulness, and since they are all in direct competition with native plants that are to be preserved in their natural state "for the enjoyment of future generations," their growth must be controlled.



GOLIATH OF THE FUNGI

By Neil R. Bassett, Ranger-Naturalist

To the average park visitor the term fungus brings forth visions only of mushrooms and toadstools, and he would be surprised to learn of the multitude of forms to be found in Yosemite alone. Of more than passing interest is the fact that a fungus makes up part of the lichens which so thoroughly streak or cover Yosemite's rocks. The other component of lichens is an alga.

Also included among the fungi in the park are several species of puffballs belonging to the family *Lycoperdaceae*. The giant puffball (*Calvatia gigantea*) appears to be one of the rarer forms, the most recent specimen of which was found in June 1956 by

Mr. Ricardo Werner of Rosario, Argentina. The specimen measured 52 inches in diameter, and weighed 15½ pounds. It was found in its typical habitat of pine needle duff shaded by ponderosa pine (*Pinus ponderosa*). The locale was near the loop road at the upper north end of the Wawona Meadows at an elevation of about 4,000 feet. It was placed on display in the wildflower garden behind the Yosemite Museum. The general size and shape were still recognizable on about the first of August.

The genus *Calvatia* contains puffballs of the largest size. While generally averaging from 10 to 20 inches



The giant puffball measured 52 inches in diameter

diameter, reliable authorities cite examples of puffballs measuring up to 3 ft. in diameter and weighing 47 pounds. Another is reported as having a circumference of 5 ft. 1 inch. Carl Sharsmith, Ranger-naturalist at Tuolumne Meadows for many years, has seen only one other as large as Mr. Werner's find in the park. Our Yosemite specimen, then, appears to be of average dimensions when compared to other known unusually large specimens. However, in the Yosemite area it was an unusual find and far exceeded in size any specimens of this species normally seen.

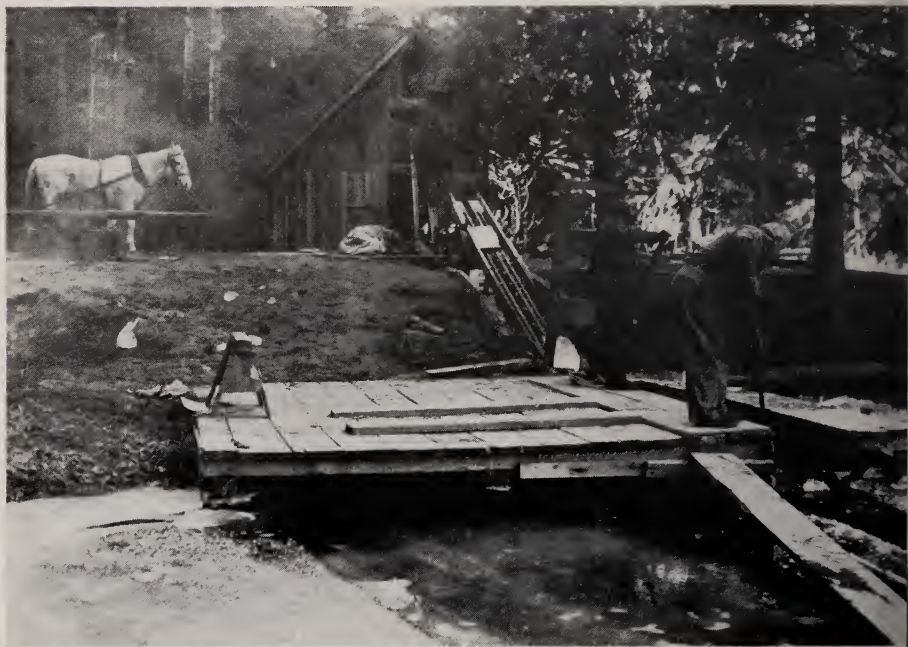
The relative abundance of giant puffballs in Yosemite National Park is unknown. They are generally at their best in August and September in the Eastern states; however, probably because of the elevation and spring runoff from the mountains these large fungi seem to reach their

peak in May and June in the Western sections. Possibly because of this earlier "season" they are not readily observed by park visitors. Museum records show only one other specimen, this one being found in 1941 in the upper Wawona Meadows beneath an incense cedar (*Libocedrus decurrens*) in short dry grass. It had a diameter of 9 inches and a circumference of 44 inches. However, others must have been observed from time to time.

Giant puffballs are considered edible only as long as the flesh remains white; they look not unlike a loaf of shepherd's bread. When the flesh turns yellow with age the puffballs become very disagreeable and indigestible. Deer, though browsing to a large extent on many species of shrubs, appear to relish puffballs in season. It is not known to what extent other animals may do the same.

OLD ICE HOUSE

By Robert J. Rodin, Ranger-Naturalist



The Persian wheel, turned by the horse, moved the ice into the ice-house on the endless belt

Most of us are interested in oddities of the past. In this modern day of electric refrigerators, many children in the present generation have not even heard of an "ice man." On a recent trip to the South Fork of the Merced River above Wawona, I came upon evidence that appeared to be an abandoned log pond and former site of a saw mill. There was a pond several hundred feet in length. The Washburn Ditch had brought water a considerable distance from the river to fill the pond. There is a small dock in what had

once been a pond, but the earth dam now had a large gaping hole in it, a result of the 1955 flood. It is interesting to note that in the washed out area of the dam many large tree roots are present and exposed but no large trees are growing in the immediate vicinity. A pile of sawdust was found below the dam.

Local people informed me that this was once a fish holding pond, then later made into an ice pond. Ice had been cut and stored in an ice house below the dam for use the following

summer. The vast quantities of saw-
st below the dam which I had pre-
med were waste from a saw mill
were actually the insulation material
the icehouse. This house, built
out 1880, was only recently torn
wn. It was in use approximately
years.

Another item of interest was still at
s location. Although manpower
as used to cut the ice, and pre-
mably men stood on the dock to
side floating blocks of ice to the
mp, the actual work of lifting these
ocks from the pond up over the
am and down into the ice house
as accomplished with horse power,
ing a very ancient device known
a "Persian wheel." A vertical
is around which a horse walked

was converted by a gear to a hori-
zontal axis and a wheel on the end
of this ran an endless chain on two
sprockets up from the pond.

It might interest our readers that
this particular principle of the Per-
sian wheel has been used for over
2,000 years and is still used by mil-
lions of people today in the Near and
Middle East. The wheel on the end
of the horizontal axis, instead of pull-
ing ice, usually is larger than this
one and has a number of tin cans
attached to it. As the camel, water
buffalo, or other beast of burden
walks in his circle, the tin cans lift
water from wells or low canals up
onto the fields. It may seem very
primitive to Americans but it is eco-
nomical and amazingly efficient for
for them.



The ice was cut by hand and poled to the dock



Naturalist conducted campfires, hikes, and nature walks are scheduled for Glacier Point, Bridalveil campground, Wawona, Big Trees, Tenaya Lake, Tuolumne Meadows as well as Yosemite Valley. Plan your next trip to Yosemite so that you have time to participate.

Yosemite Falls is at its peak.





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